Transformation of Residential Units into Commercial Spaces
in the Central Business District of Dar es Salaam, Tanzania

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Abstract
This study aims to clarify the relationship that existed between traditional building functions and building components as well as to explain the way the change of building function relates to new space uses in the Kariakoo area. Firstly, the study reviews the original architectural features, layouts, and meanings, of the Swahili/local architecture of the residential units which existed in the study area before their transformation. Secondly, changes in building functions are analyzed in the current situation while new architectural features and space uses caused by transforming residential units into commercial spaces were identified. Based on building components such as floor, façades, verandah, and roof, the study concludes typologies of new space uses obtained to facilitate the current commercial activities. Finally, the study observed that the change of building functions in Kariakoo has not only affected the building components but also that it has positively transformed the area in being place for both a living (residential) and working place (commercial) thus making Kariakoo an important hub in the city center.

Keywords: building function; Swahili architecture; city centre; space between buildings; building components

1. Introduction
1.1 Background
African architecture has been subjected to numerous external influences from the earliest period of colonial occupation. In the late 7th century, north and east Africa were heavily influenced by the spread of Islam, leading to the appearance of new cultures such as those of the Swahili people. In addition, the architecture of Africa, like other aspects of its culture is exceptionally diverse where western architecture also had an impact on coastal areas since the late 15th century. It is now an important source for many large buildings, particularly in major cities such as Dar es Salaam.

Swahili architecture is a style of building along the Eastern and Southern coasts of Africa including the historical cities such as Kilwa, Malindi, Mombasa, Zanzibar and Dar es Salaam. The architectural style in these cities has been thought by scholars to be essentially of Arabic or Persian origin.

Dar es Salaam was the first capital city of Tanzania until 1966 when it moved to Dodoma. It remains the centre of the permanent central government bureaucracy and the largest city in Tanzania. Formerly, it was known as Mzizima ("healthy town"). However, in 1866 Sultan Seyyid Majid of Zanzibar gave it its present name, an Arabic phrase meaning "Abode of Peace." A popular but erroneous translation is "haven of peace" resulting from a mix-up of the Arabic words "dar" (house) and "bandar" (harbor). Based on the above historical references, it can be agreed that Dar es Salaam is a city with rich historical settings and cultural diversities which justifies this study to be conducted in Dar es Salaam city in order to show a link between its historical settings, culture, architecture and urban transformation.

In detail, the study focuses on the Kariakoo area, which is one of the urban districts that experienced colonial influences from the Arab, German, and British occupations. The Kariakoo area can be mainly perceived at two main levels due to colonial influences; in the level of urban planning, Kariakoo was mostly influenced by the German and British planning system using gridiron pattern facing the north-south and east–west directions. This includes the streets, blocks, and plot layouts (Fig.1. B and C). At the residential unit level, Kariakoo is dominated by Arabic and Bantu features in terms of building composition, layout and space uses. Architectural features such as arches, courtyards and decorative elements on the buildings are among the influences from the Arabic occupation. Therefore, it can be agreed with a fair amount of certainty that Kariakoo is an urban neighbourhood that contains not only varieties in historical value, but also a combination of various urban planning features that

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needs to be appreciated.

The study hypothesizes that the change of use in the buildings in Kariakoo has a direct relation to the conversion of the building components due to the process of transformation, and that the new uses of the buildings have a close relationship with the nature of developed commercial spaces. Based on the above hypotheses, this study aims to clarify the relation that exists between building function and components as well as to verify how the change of such function relates to the new spacing uses in the Kariakoo area.

1.2 Objectives

Therefore, the objectives of the study are:

To clarify the relation between the change of the building functions and the transformation of building components at the residential unit level; and to clarify how the transformed building components lead to possible patterns of new uses of spaces in Kariakoo.

2. Previous Study Related to Kariakoo

So far, several studies have been conducted in Kariakoo focusing on various issues. Among others, the study by Kironde (1995) focused on the impacts of land use policies as they were instituted in Dar es Salaam including Kariakoo. The author did not focus on residential units nor did he show the current situation. Another study was done by Lupala (2002), who was more interested in analyzing the typologies of residential settlements which can be found in Dar es Salaam. The author did not address the residential building components which have been transforming due to the changes of building functions. Other studies were conducted in Kariakoo by Swai and Deguchi (2007) analyzing the influences of colonial policies on the evolving process and growth of urban structures in Dar es Salaam. The study pointed out Kariakoo as one of the three main urban structures in the city center.

Based on these previous studies, it can be noted that none of them focused specifically on showing a relation between the changes of building functions and building components. In addition, it can also be argued that the extent of effectiveness of the transformation of residential units was not fully covered by the previous studies. This study appreciates the contribution made by these previous studies, however, given the difference between their contributions and this study, it seems reasonable to suppose that this study will bring about a new understanding between the changes of building functions and building components, as well as the related possible space uses.

2.1 Outline of the City and the Study Area

The Kariakoo area is one of the three main urban structures which form the urban center of Dar es Salaam city while the other urban structures include the main Central Business District and the government institutions (Fig. 1. B). These urban structures resulted from chronological colonial occupations of Dar es Salaam by Arab, German, and the British consecutively. The occupations were accompanied by social and racial segregation policies by which the current locations of government institutions were formerly demarcated for Europeans. The current CBD1 was formerly occupied by Asians of Arab and Indian origins. The current Kariakoo area, which is also known as Central Business District 2 (CBD2), was formerly earmarked as the natives’ settlement (Fig. 1. B).

Kariakoo covers about 1.96 km² of land which is bound by the Morogoro Road to the north, the Biti Titi Street to the east, the Nyerere Road to the south, and the Shaurimoyo and Uhuru Streets as well as Msimbazi valley to the west (Fig. 1. C). The name of Kariakoo is a Swahili word that originated from the word “Carrier Corps” because the original and current location of the Kariakoo market was used as a military depot for Carrier Corps during the WWI.

Other sources show that historically, Kariakoo was

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Fig. 1. Location of Dar es Salaam City and Kariakoo Area

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a small village that was frequently raided by slave traders where thousands of people were kidnapped from Kariakoo and forced into slavery in America, Europe and Arabian countries.

3. Methodology
The analysis was conducted as follows: an overview of the Kariakoo area was done describing the location and the original boundaries of Kariakoo based on archived information and other documents cited in the previous studies. The first field survey was conducted between July and August 2006. Due to lack of maps in electronic form, the current maps of Kariakoo surveyed by the Ministry of Lands and Human Settlement Development (MLHSD) were collected, scanned and traced for the use of this study.

General and specific identification of the different levels of transformation based on block level and the residential units were also conducted to identify the specific area of study (Fig.1.).

Another field survey was conducted between October and November 2007, which involved the identification of the main features such as the main streets; blocks which were in different scales of transformation; original and new buildings; specific building components; and the new uses of space in commercial contexts.

Physical measurements of old and new buildings, streets, and new commercial uses of spaces were conducted. Interviews to the old people who lived in Kariakoo pre and post transformation era, was conducted to discern the essence of the traditional residential units' layouts, and their meanings.

4. Identification of General and Specific Building Conditions
During the field survey and by observing the boundaries of Kariakoo (Fig.2. A), general and specific building conditions were identified in each block and street. Buildings were counted and classified as either traditional fully transformed; traditional partially transformed; traditional not transformed, or as a modern building. Following the blocks in which the building types were obtained, the percentages of types and the extent of transformation in the building units, a pattern of distribution was obtained as A, B, C, D, E, F and G shown in Fig.2. A. Based on this pattern of distribution, it was revealed that pattern B had the highest percentage (80%) of transformed building units. In addition, it was observed that most of the current commercial activities are concentrated in pattern B.

Furthermore, the highest percentages of new commercial spaces such as underground shops, shops in narrow spaces between buildings, and upper level commercial spaces were concentrated here. Another observation highlighted that pattern B has famous historical streets such as Msimbazi, Uhuru, Mkunguni, and Sikukuu (Fig.2. A).

Both knowledge obtained from the previous studies and the current field surveys showed that the area where pattern B is located has the Kariakoo market, which is both historical and being the biggest in Dar es Salaam city. Having observed the above factors related to pattern B, the area was designated for detailed investigation of the specific components which had transformed due to the changes of the buildings'...
After the specific study area was concluded, the blocks within that area were designated by numbering them from 1 to 64. Public buildings were distinguished from the residential units (Fig.2. B). Since the objective of the study was to focus on the residential units, another map showing the super imposition of the public buildings and residential units was developed in order to show the actual layout of the entire area of study (Fig.2. B and C).

To begin with, the checklist for building types was limited to three levels: the total number of buildings in each block; the total number of modern buildings and the total number of traditional buildings partially transformed. The term "modern building" was used to represent any other type of building which had none original features of the buildings of Kariakoo. Through this process, it was possible to discern the total number of the original residential units as well the number of other types of buildings in each block and within the entire study area (Fig.3.).

5. Identification of Features of the Original Residential Units in Kariakoo

Physical measurements were conducted within few existing original residential units to identify common architectural features. Interviews were also conducted with some elderly people who are the original residents of Kariakoo. Physical measurements and the results of the interviews were applied to regenerate the layout of the original building settings including the space use and meaning as well as other architectural features of the original building units (Fig.4. [iii]).

5.1 Building and Roof Layout

The analysis revealed that the original plots had one main building and a toilet. Buildings had courtyards located just behind them. Toilets were of a "pit latrine type" due to the lack of proper infrastructure in Kariakoo. The courtyard was mainly used by women for social activities while children used the same for playing. Due to the influence of Arabic/Islamic culture, it was observed that segregation of space use was practiced. While women used to stay in the courtyard, men used to socialize in the front veranda which is locally known as "Baraza" in Swahili/local architecture.

Space between buildings was found to be common in the building layout. According to the field survey, it was observed that buildings had an offset of 1.5m on either side (Fig.4. [i ~ iii]). Most traditional residential units in Kariakoo were made up of hipped roofs.

5.2 Room Layout

Based on the field survey and the interviews, it was found that the majority of the residential units had an average of six rooms arranged on both sides of a common corridor located at the center of the building.
The main entrance and exit are located in the corridor and rooms are accessed from the corridor (Fig.4.). There are two possibilities for the use of residential units. The first one is the case where the entire building is occupied by one family. In this case, family members use the rooms for sleeping, while the corridor is used for cooking and storage of charcoal, cooking pots and other household items. The second possibility is the case where the same building is rented to different tenants. This case is more complicated because each tenant's family stays in a particular room while they share the corridor for cooking. Others use the courtyard for cooking and other common activities such as washing and gathering. This is a common lifestyle in the Kariakoo area, especially in the old residential units.

5.3 Verandah "Baraza" Layout
A verandah (Baraza)\(^3\) is a traditional sitting area outside of a Swahili home. According to the field survey, measurements showed that Baraza was made intentionally as an indoor-outdoor socializing space for men. Dimensions show that it was intended to be used as a sitting and relaxing space. It was 45cm high from the ground with a lean on space on the side (Fig.4. [ii]). Normally, men sit in the Baraza and to socialize by playing cards, drafts and other traditional relaxing games. Other uses include drinking coffee and watching people passing along the streets in the evening. The Baraza directly faces the street and is located on one side of the building (Fig.5.).

5.4 Building Materials
The results of the field survey and the interviews conducted in Kariakoo during this study show that the original residential units were built of the following materials:
- Floor was made up of sand cement screed, while walls were basically made up of rammed earth and pole with smooth cement screed plaster (Fig.6.).
- Windows were made of louvered wooden planks to enable ventilation and air circulation, which is needed due to the hot and humid weather in the Kariakoo area (Fig.7.).
- Doors were made of wood panels while roofs were made of hipped corrugated iron sheets.

6. Transformation of Building Components
Based on the results of data collection, it shows that the first impact on housing transformation took place during the colonial occupation when the population of Africans seeking for jobs and a better life came to Dar es Salaam, and settled in the Kariakoo area.

The second impact took place during the declaration of the free market economy that encouraged local and foreign investors to develop land in prime areas within the city center. In the later case, Kariakoo attracted a number of investors due to its strategic location within the city center. However, the government was not able to control the development; hence the process was conducted informally. The field survey led this study to uncover several traditional residential building components which were transformed for the buildings to meet the new commercial uses.

6.1 Floor Transformation
The change of building uses in the Kariakoo area has encouraged most of the traditional residential units to be transformed into commercial areas. Local investors approached the building owners by offering higher rent in order to secure commercial premises especially for the buildings which were located at the corner or along famous streets. The process was conducted informally without involving the city officials. Since the building owners were receiving higher rent from commercial premises, they discouraged tenants who wanted to use the rooms for residential purposes especially the rooms facing the streets. Commercial users had to introduce some modifications in the rooms to suit the new uses such as shops, stationery and hardware stores. During the field study, several transformed residential units...
were identified and documented (Fig.8. A and B). A comparison between the original room layout and the new layout was conducted to highlight changes thereto (Fig.8.).

The first category of floor transformation can be seen (Fig.8. A), where the main entrance was maintained while the two rooms on the sides of the entrance were converted into commercial spaces. This is a common case for commercial activities such as stationery stores, dispensary services, and small offices were introduced in the Kariakoo area. The transformed walls were built of concrete blocks, glass and steel. The original verandah was hacked and lowered down to the ground level to allow easy accessibility into the new shops for customers. Tenants who live in the interior rooms used the original central entrance. As compared to the original situation, the meaning and uses of spaces are notably transformed.

The second category of floor transformation was noticed in (Fig.8. B) where the main entrance of the original building was blocked to give more space for commercial activities. Depending on the nature of the new usage of the space, one side of the room was extended to cover the original entrance area.

This is accompanied by the demolition of the original verandah (Baraza) and some parts of the original walls. In these cases, a new verandah was built outside the main house to attract customers while the roofs are extended to cover the new verandah. The study found that the later transformation led the building owners to creating a new main entrance through the sides of the buildings, which was the former space between buildings (Fig.8. A and B).

6.2 Façade Transformation

Street façades were transformed due to the various changes on the floors and roofs. Transformations of the façades were easily tracked due to the visual effects they created when compared to the original buildings. At first, façades were classified as either traditional modified façades or new building façades. Traditional modified façades were further categorized into the original residential units whose components including the walls, windows, verandahs, and roofs had been modified by an addition of new or an omission of an original component to meet the requirements of the new commercial uses. New building façades were constituted as newly built structures in Kariakoo which did not reflect of the original residential features (Fig.9. [iii]).

In addition to distinguishing the façades in terms of their status, building façades were also classified based on their location. Buildings located at the corner of streets have two façades while those which were at the middle of the streets have single façade (Fig.9. [iii]). Based on these classifications, transformation results for each of the above categories were identified and analyzed.

In order to understand the insights into the transformation of facade, three main components of the wall were considered. The façade components include doors and windows; verandahs, and roofs. Sketches from site photos were developed to show the new features in the traditional buildings, as well as in the modern buildings (Fig.10.).

6.3 Doors and Windows Transformation

The change of function from the residential building units into commercial spaces was associated with the change of windows and doors. Currently, most of the buildings in the Kariakoo area have big and wide doors which have visual effects that attract customers as well
as displaying commodities in shops. Most traditional small windows and doors have been removed (Fig.10. [A–H]). New curved structures made of canvas for shading on top of windows were identified (Fig.10. [A, C, and G]).

6.4 Verandah Transformation

Although basically the traditional residential units had a verandah or (Baraza), the new uses of buildings necessitated a new type of verandah to cater to commercial activities. An extended verandah along the street became a common trend for new commercial buildings (Fig.10. G and H). Also, the trends show that temporary verandah on the traditional walls was extended to meet commercial needs (Fig.10. D).

6.5 Roof Transformation

Traditional roofs have been extended to cover the front verandah, which acts as a means to attract and cover customers against weather effects. Two types of extensions are noteworthy including an extension which followed the inclination of the original roof structure. Normally, this type of extension was constructed using the same materials as those of the original buildings (Fig.10. [B, D and E]). The second type of roof extension did not respect the original roof structure. Normally, this category involved new materials such as concrete and steel pipes (Fig.10. A and H). Some cases involved the two categories on the same building (Fig.10. A and B).

Vertical extensions of buildings to make room for more spaces for commercial activities were another observed trend on building façades. The difference between the original height line and the new height was vividly identified (Fig.10. E).

One of the original architectural features in Kariakoo was the presence of spaces between buildings (Fig.4.). Based on the analysis of transformed building components, it was also revealed that the spaces between buildings had been transformed into commercial spaces (Fig.10. F).

It can be argued that the analysis of transformed building components gives Kariakoo a new image with two main styles. The first style is a combination of old and new building components (Fig.10. [B, C, D, E and F]), while the second style of building façade was comprised of new single and multi-storey buildings (Fig.10. [G and H]).

7. Spaces between Buildings

The results from the field survey show that, most of the original spaces between buildings transformed to favor commercial activities. Typologies of the spaces between buildings were developed depending on their forms and visual effects. Spaces between single storeys modern buildings were differentiated from the spaces between multi-storey modern buildings.

7.1 Spaces between Single Storey Buildings

This category of buildings had three main types depending on the way they are enclosed. All of the spaces between these buildings were rectangular in shape; however, they differed in the way the space was covered. The first category was designated as an open type. This category includes all the spaces between the buildings which are open to the sky and not covered (Fig.11. [i]). The second category was considered as closed types; close types are further subdivided into two sub groups, namely a slated closed and a triangular closed types (Fig.11. [ii and iii]). The purpose of closing the space was both to prevent rain from coming in and to provide light. Thus the materials used for covering the space were transparent plastic corrugated sheets in order to illuminate the space.
7.2 Spaces between Multi-Storey Buildings

Spaces between multi-storey buildings were normally closed with transparent materials to allow light. However, due to their vertical effect, light was not enough in most of the shops in those spaces. Measurements were taken to determine the space distribution inside and outside the buildings. Two different building types were considered, namely, a building with underground shops and another building without a basement. The two buildings were next to each other. The section showing the width of the spaces was developed (Fig.12.). Three types of space uses were identified including the underground commercial spaces, ground level commercial spaces, and the upper level commercial spaces. Transition from single space use to multi-use was demonstrated in Fig.13.

![Fig.12. Space between Multi-Storey Buildings](image1)

![Fig.13. Transition of Space and New Uses](image2)

8. Conclusion

This study was objectively set to discern the relationship between traditional building functions, layouts and components in Kariakoo, and how the changes of the function affected the building components. Several issues were revealed.

Based on the results of the case studies and interviews, the study shows that features such as Baraza, model showing the typical features and layout of the Swahili architecture in figs. 4 and 5. Moreover, courtyard were borrowed from Islamic culture, while common sharing of the entrance corridor for cooking and storage was from Swahili culture. The features were designed to facilitate residential function of the buildings. However, the study showed that, due to the change of building functions from residential to commercial, most of the features and building components such as floor, front verandah, windows, entrance doors, and roofs, were transformed to facilitate commercial activities while new materials and technology was also improvised, this was shown in Figs.8., 9., and 10.

Based on the above observations, it is noteworthy to conclude that transformation did not only affect building components but also the entire building through demolition of the traditional buildings to give room for modern commercial facilities. In this case, the original buildings set backs were transformed into narrow commercial spaces between buildings.

Finally, it was observed that transformation of residential buildings has introduced new and effective uses of space such as under ground and upper level commercial spaces. Besides the prime location of the Kariakoo area, transformation has attributed to make the place an important hub in the city center by combining working and living space within the urban context. Nevertheless, there is a need to control and monitor the transformation in order to preserve the history of the Kariakoo area.

Endnotes

1 Seyyid Said was the son of Seyyid Sultan bin Ahmed and the grandson of Ahmed bin Said, the first ruler from the Albusaid Dynasty in 1832. He was the first Arab leader to settle in Kariakoo.
2 Residents who were the first to live in Kariakoo before colonial occupation and who have experienced the process of transformation.
3 Baraza is a Swahili language word (local language spoken in Tanzania) which means a meeting or a gathering place.

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